APPENDIX "C"

United States v. Rowland A. Fabian
United States District Court for the Northern District of Indiana
Civil Case Number 2:02CV495RL

EPA'S RESTORATION PLAN FOR DEFENDANT FABIAN'S FILLED WETLAND

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EPA'S RESTORATION PLAN FOR DEFENDANT FABIAN'S FILLED WETLAND

The United States Environmental Protection Agency ("EPA") requests that the Court, upon a finding of liability, order Defendant Rowland A. Fabian ("Defendant") to restore approximately 7.5 acres of wetlands that he filled to their pre-violation condition in accordance with EPA's Restoration Guidelines, which are explained herein. These wetlands are located on Defendant's property adjacent to the Little Calumet River (a.k.a. Burn's Ditch) (the "site").

The goal of restoration is to reestablish wetland plant communities atop native site soils based on pre-violation site contours. Abundant information exists to guide restoration efforts. On-site wetland remnants can act as guides to reestablishing the appropriate contours, natural soil profiles and plant communities.

To accomplish the restoration goal, site disturbances must be reversed. The reversal begins by stripping off multiple surface fill layers using earthmoving machinery working on tracks to minimize soil compaction. There are multiple fill layers on-site, including road fill material. Fill material layers consist of sand from the Wabash railroad embankment ("Wabash RR"), dredged spoil from on-site trenching, and additional mixed fill layers consisting largely of sandy and loamy soils - some interspersed with solid waste/trash.

Removing the fill layers and reestablishing the original contours, including slopes, will return normal hydrologic cycling to site wetlands. Hydrogeological forces characterize the site's seepage wetlands. Seepage wetlands express their dominant hydrologic source, i.e., ground water, as seepage, i.e., ground water discharge, on a sloping land surface.

The reversal is complete when self sustaining plant communities are reestablished via seeding, planting and adaptive management of the emerging plant communities. Adaptive management requires development of a monitoring protocol and a management plan to achieve site restoration goals, i.e., self sustaining native plant communities. For example, it may be necessary to apply prescriptive land treatments such as spot herbiciding, burning and mowing to assist in restoring ecological health, e.g., preventing invasive weed competition. Site specific performance standards are quantifiable measures used to ascertain whether site restoration goals are met. Performance standards are surrogate measures of site ecological health. When performance standards are achieved, we can be confident that self sustaining native plant communities have returned.

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Based on EPA's inspections of the site and other information exchanged by the parties, the general plant communities that existed prior to disturbance are as follows:

1. emergent marsh and sedge meadow wetland near U.S. Highway 20 south to the former Wabash RR - the northern third of the site;
2. shrub-scrub wetland interspersed with wet meadow continuing south of the Wabash RR to the Northern Indiana Public Service Company's ("NIPSCO") electrical tower utility corridor - the middle third of the site.

A detailed restoration plan follows consistent with these Restoration Guidelines (see Exhibit No. 1 for EPA Restoration Guidelines).

I. Existing Physical Conditions

A. Surveyed Site Plan. EPA requests that the Court, first, order Defendant to complete an independent, professional survey of site areas to be restored. This surveyed site plan should outline site property boundaries and other prominent site features, such as buildings, roads, electrical towers, pipelines, wetland restoration areas, existing elevation contours, including spot elevations in undisturbed areas next to the wetland restoration areas, and any other relevant site features at a scale of no less than 1 inch = 40 feet.

Spot elevations are necessary to guide earthmoving work so the finished grade approximates the pre-violation ground surface by mirroring the elevations of the neighboring undisturbed wetlands. An equally important consideration to final grades is the complete removal of multiple surface fill layers until the natural surface is reached.

An approximation of the time and cost involved in completing a survey: 6 hours @ $95/hr. = $570[1]

B. (1) Size and Type of Wetland Restoration Areas. The wetland restoration area is approximately 7.5 acres, and consists of two distinct areas. The first area is between U.S. Highway 20 on the north and the Wabash RR on the south - the so called northern third. Its east boundary is the west edge of a site access road that extends from U.S. 20 to the Wabash RR. Its west edge is largely defined by the toe of an existing sand dune which ends just north of the intersection of the Wabash RR and another site access road called the billboard road.

The second area - the so called middle third - is bounded on the north by the Wabash RR and on the south by NIPSCO's electrical tower utility corridor which includes a maintenance road beneath steel towers and overhead wires. Its east boundary is a south to southeast extension

of the site access road to NIPSCO Tower #9041 - the easternmost tower on the site. The NIPSCO maintenance road and the site access road merge at this point. The west boundary extends to and includes the billboard road.

Unpermitted fill and dredged material and solid waste amounts vary within the restoration area. The northern third has variable depths of sand fill ranging from several inches to three (3) feet, but also includes some bulky construction demolition debris and solid waste trash near the northwest corner.

In the middle third, depths of fill and dredged material are similarly variable, and range from seven (7) inches to about three (3) feet. In the southwest corner of the middle third, there appears to be a more uniform layer of dredged material about 11 inches thick. The source of this dredged material is likely the nearby on-site trenching operations, i.e., abutting or near the south edge of the NIPSCO road and both west and east of NIPSCO Tower #9042. The source of multiple fill layers on the east and middle sections of the middle third is most recently sand, but is otherwise variable between sandy and loamy soils, and it is interspersed with solid waste. Lastly, the western boundary of the middle third is the billboard road. The fill material making up the billboard road is unknown, but it has an earthen surface. In addition, there are numerous piles of tires on either side of the billboard road.

Related to Defendant's discharges in the middle third, EPA is requesting restorative action in a narrow wetland area that, in part abuts, or is otherwise near the south edge of the NIPSCO road and the remainder of the billboard road which extends southward to the Little Calumet River's left bank berm. As noted in the preceding paragraph, Defendant excavated trenches along the south edge of the NIPSCO road and likely deposited the resulting dredged material in the southwest corner of the middle third. The excavation left behind a trench several hundred feet long of variable width and depth. Defendant subsequently relocated from other areas of the site hundreds of automobile tires and intermingled solid waste and dumped them into the trench. Site restoration should therefore include the removal of the solid waste/automobile tires in this trenched area and restoring the trench by backfilling with the dredge spoils reclaimed from the southwest corner of the middle third.

(2) Description of the Wetland. The wetlands in the restoration area are, on a hydrogeologic level, seepage wetlands. The seepage wetlands formed on the south face of the Little Calumet River valley. Sand dunes formed during post glacial times are located at the top of the watershed - now traversed by U.S. Highway 20 which forms the north boundary of the site. There still exists a small remnant dune on the northwest corner of the site. At its toe, the seepage wetlands begin. The seepage wetlands reside on a land surface that slopes down the valley face to the valley floor where the Little Calumet River historically meandered. Currently, the Little

Calumet River is channelized and now also known as Burns ditch. The altered channel is contained within large berms created during the channelization process.

With respect to plant communities and native soils, in the northern third, emergent vegetation, e.g. cattails, prevailed pre-violation except where (a) skunk cabbage plants line the base of the neighboring sand dune's toe and (b) sedge meadow/shrub-scrub elements existing in a thinner strip of natural land at the northwest corner of this area - between the sand dune's toe and the north edge of the Wabash RR. EPA observed cattails growing through the filled surface in 1998 and in subsequent years in the northern third. Additionally, a private consultant delineating this area in 1997 observed cattails pre-disturbance.

The northern third's emergent marsh overlaid mostly mucky soils - indicating greater lengths of soil saturation and inundation. Muck soil is organic soil made up of partially decomposed plant matter due to prolonged periods of saturation or inundation, i.e., ponding. This muck soil is also mapped on the Soil Survey of Lake County, Indiana, which shows it extending south and west into the middle third.

In the middle third, a shrub-scrub wetland interspersed with wet meadow prevailed pre-violation on the east end. At its west end, the plant community is predominately a forest of box elder and cottonwood trees, though it also has herbaceous dominated shallow marsh and wet meadow vegetation. Outside of the muck soil unit in the northwest corner of the middle third, the remainder of this area contains a silt loam soil, underlain by marl, and mapped as Warners silt loam (also listed on Lake County, Indiana hydric soil list).

II. Proposed Physical Conditions

A. Surveyed Site Plan of Proposed Physical Conditions. EPA requests that the Court, second, order Defendant to complete a report detailing the proposed removal and restoration work (using the site plan described in section I.A. above as a base). Spot elevations - established during the baseline survey in adjacent undisturbed wetland areas - will guide fill material removal. Areas for fill removal include all areas described in Section I.B, above. In addition, Defendant must provide proposed finished grades by depicting typical pre-violation land contours and associated soil profiles (one every 100 feet of land surface), proposed planting/seeding types, amounts and locations, and typical best management practices for construction sites, e.g., erosion control plan.

An approximation of the time and cost involved in completing a removal/restoration plan: 16 hours @ $75/hr. = $1,200.[2]

B. Description of Removal and Restoration Work. All excavated fill material must be removed and disposed of properly. In the case of the dredged material discharged in the southwest corner of the middle third, that material will be specified to be used to backfill the trenches from whence it came.

(1) Methods and Equipment. Heavy equipment must be tracked. Tracked rather than wheeled vehicles minimize soil disturbance during work and are less likely to get stuck. Defendant should further minimize site impacts by accessing areas using the existing Wabash RR and NIPSCO road and by working off the filled areas while removing fill layers. Prior to beginning removal work, Defendant must demarcate, using the surveyed site plan as a base, the outer boundaries of construction activities which includes the areas to be restored and areas to be avoided. Fill removal and do not disturb area boundaries must be marked with flags prior to commencement of earth moving work. Equipment must be stored in upland areas when not in use. Soil ripping may be necessary after fill layer removal to address soil compaction.

An approximation of the total cost involved in completing fill material removal: $36,646. The break out of costs by area, extent of fill removal, time for fill removal and equipment use are described below:

a. Northern third: 5.5 days (44 hours) to excavate approximately 8,672 cubic yards of fill material (see bullet below) X $85/hour = $3,740.[3] 147 hours to haul and dump removed fill material X $45/hour = $6,615.[4] 72.3 hours to rough grade dumped fill material X $95/hour = $6.869.[5]

- 2.5 acres (aerial extent of fill) X 43,560 square feet per acre (conversation factor) X 2.15 feet (average depth of fill) divided by 27 (conversion factor) = 8,672 cubic yards

b. Middle third: 5 days (40 hours) to excavate approximately 8,180 yards of fill/dredged material and solid waste (see bullet below) X $85/hr. = $3,400.[3] 136 hours to haul and dump removed fill material X $45/hour = $6,120.[4] 68.2 hours to rough grade dumped fill material X $95/hour = $6,479.[5]

- 3.9 acres (aerial extent of fill) X 43,560 sq. ft./acre X 1.3 feet (avg. depth of fill) divided by 27 = 8,180 cubic yards

c. Billboard road: 1 day (8 hours) to excavate approximately 1,778 yards of fill/dredged material (see bullet below) X $85/hr. = $680.[3] 29.7 hours to haul and dump removed fill material X $45/hour = $1,337.[4] 14.8 hours to rough grade dumped fill material X $95/hour = $1,406.[5]

- 16,000 square feet (aerial extent of fill is 800 feet by 20 feet) X 43,560 sq. ft./acre X 3 feet (avg. depth of fill) divided by 27 = 1,778 cubic yards

d. Miscellaneous Areas: Tires and other solid waste line each edge of the billboard road and unknown amounts of similar material exists in trenches area south of the NIPSCO road and east and west of NIPSCO Tower #9042. EPA does not have sufficient information to estimate the amount of solid waste to remove from this area. Accordingly, the total cost noted above for fill removal and disposal is a conservative estimate. Disposal costs for solid waste will, however, be higher than disposal costs for earthen materials.

An on-site construction supervisor, with experience in soil science and wetland restoration must be present periodically to assist equipment operators in reestablishing soil profiles and grades. EPA will periodically conduct oversight inspections to verify that fill material removal is sufficient.

An approximation of the time and cost involved in construction oversight: 44 hours X $75/hr. = $3,300.[6]

(2) Schedule of How Work Will Progress Across the Wetland Restoration Area Site. Work will occur in phases. The first phase will be restoration of the middle third 's southwest corner and the associated trenches in the lower third. First, the tires and intermingled solid waste will need to be removed and disposed of properly. Then, the dredged material in the middle third's southwest corner will be excavated and placed back into the trenches and graded flat or slightly sloped towards the berm abutting the Little Calumet River.

The second and third phases of restoration will remove fill layers in the rest of the middle third and top third respectively. The last phase involves removing the fill material composing the billboard road. Phased work will allow a determination of whether initial methods of fill removal and reconstruction of soil profiles and grades are successful or need adjustment.

Work will progress as follows:

1. Install erosion control barrier at the south edge of the trench in the northwest corner of the lower third area. This erosion control barrier must be maintained in working condition until vegetation is sufficiently established to eliminate sheet or gully erosion from rain or melt events.

2. Collect tires/solid waste into dump trucks and properly dispose of off-site.

3. Remove dredged spoil in the southwest corner of the middle third and place in to trenches. Grade any trench related side casted material back into the trenches and grade with slight slope to the south. The excavated area and the restored trench area is immediately seeded with an erosion control cover crop at a rate of 40 pounds per acre and mulched with weed free straw or equivalent. Follow-up with installation of a native seed mix at a rate of at least 20 pounds per acre, plus, in southwest corner of middle third, install shrub plantings on 20 foot centers.

4. Working off the filled areas as a pad, continue stripping fill layers from the middle third.

5. When earth excavation is complete or near 95% completion, EPA will be contacted for a restoration plan compliance inspection to ensure soil profiles, grades and fill removal are adequate. The earth moving contractor and Defendant or his representative should be in attendance. In addition, an independent surveyor should be on-site to assist in documenting grades. A 95% completion inspection should be held after each of the four phases of fill material removal.

6. Determine whether any middle third area must be soil ripped to offset soil compaction from heavy machinery. If the heavy equipment stays on the fill pad, soil ripping should not be necessary, particularly when in the course of fill removal, toothed excavator buckets can be used to fluff up the first several inches of the underlying, pre-violation surface horizon.

7. Seed area with an erosion control cover crop and mulch. Install erosion control barrier on north edge of the middle third, i.e., south side of Wabash RR. Next, overseed with a diverse selection of native seeds of at least 20 pounds per acre of wet meadow native seeds and shrub plantings on 20 foot centers. At least five different species of shrubs will be chosen. An organic mulch will be placed to a diameter of two (2) feet and a thickness of three (3) inches around the base of each shrub. The shrub species to be planted and some representative herbaceous sedge, grass and forb species identified in Section II.B(3), below.

   An approximation of the cost involved in site seeding/planting for middle third and trenched area: (a) straw mulch = $8,494[7]; (b) seeding = $3,686[8]; and (c) 425 shrub plantings = $8,500.[9]

8. Continue the process of fill removal and grade matching while moving through the northern third. If necessary, soil ripping may occur. An emergent plant

community should reemerge after fill material removal. Consequently, the planting of this area is with a reduced amount of emergent plant plugs to enhance its diversity (seeding is not appropriate in areas where surface inundation is expected). Place erosion control barrier at interface with shoulder of U.S. Highway 20 (no mulching necessary).

An approximation of the cost involved in installing emergent plant plugs for northern third: 500 plants per acre = $3,375.[10]

9. Continue the process of fill material removal and grade matching while moving from south to north on the billboard road. Given the depth of fill material and the greater length of time it has been in place, the wetland area beneath the billboard road is most likely in need of soil ripping. As the road fill material is removed from south to north, soil ripping, erosion control seeding/mulching and installation of erosion control barriers should occur in 100 foot intervals. The erosion control barrier should be placed across the restored road area in an east to west direction. Next, overseed with a diverse selection of native sedge meadow seeds at a rate of at least 20 pounds per acre.

An approximation of the cost involved in site seeding/mulching for the billboard road: (a) straw mulch = $80[7]; and (b) seeding = $347.[8]

10. The placement of additional erosion control barriers across the restoration areas while work is ongoing is dependent of the work phasing and climatic conditions. Smaller segments of the restoration areas should not be left without an erosion control covering if exposed to the elements for greater than two days. If two days will be exceeded, then an erosion control barrier, e.g, straw mulch or organic mats, will be placed over the exposed area. This will prevent erosion control events in the interim time period between initiation and completion of fill material removal and soil profile reconstruction.

An approximation of the cost involved in installing silt fence at four distinct site locations: 1,860 ft of fencing @ $2.00/foot = $3,720.[11]

11. Herbaceous seeding will occur at a rate of 20 pounds per acre, will be hand broadcasted and raked into the soil surface to ensure good seed - soil contact or drilled into the ground surface by mechanical means. Some required herbaceous seeds are listed in Section II.B(3), below. Herbaceous seeds will not be sown within one foot of mulched shrubs.

12. Local area nurseries or other commercial seed sources should be contacted immediately by Defendant upon the Court's approval of the restoration plan to ensure shrub and seed availability. If availability is limited, then changes to the plant lists may be made only upon the prior written approval of EPA and/or the Court.

(3) List of Plant Species To Be Seeded or Plugged.

Herbaceous plant species:

1. Lake sedge (*Carex lacustris*)
2. Skunk cabbage *(Symplocarpus foetidus)*
3. Fowl manna grass (*Glyceria striata*)
4. Great angelica (*Angelica atropurpurea*)
5. Marsh marigold (*Caltha palustris*)
6. Broad leaved woolly sedge (*Carex pellita)*
7. Sensitive fern (*Onoclea sensibilis*)
8. Starflower (*Trientalis borealis*)
9. Spotted Joe Pye weed (*Eupatorium maculatum*)
10. Sawtooth sunflower (*Helianthus grosseserratus*)
11. Common satin grass (*Muhlenbergia frondosa)*
12. Marsh wild timothy (*Muhlenbergia glomerata*)
13. Blunt-scaled wood sedge (*Carex albursina*)
14. Blue joint grass (*Calamagrostis canadensis*)
15. Brome hummock sedge (*Carex bromoides*)
16. Bristly sedge (*C. comosa*)
17. Porcupine sedge (*C. hystericina*)

Shrub species:

1. Spice bush (*Lindera benzoin)*
2. Ninebark (*Physocarpus opulifolius*)
3. Speckled alder (*Alnus rugosa*)
4. Inland shadblow (*Amelanchier interior*)
5. Blue beech (*Carpinus caroliniana*)
6. Meadow willow (*Salix petiolaris*)
7. Blue-leaved willow (*S. glaucophylloides*)

III. Actual Restored Physical Conditions After Grading

A. As-Built Plan. EPA requests that the Court, third, order Defendant to document successful completion of the wetland restoration activities. Within 15 days of completed earth moving activities, Defendant should prepare an as-built plan that depicts spot elevations recorded every 30 feet along a west to east axis through the northern and middle third wetland restoration areas and along a north to south axis through the billboard road area to verify the actual finished grade. Previously surveyed spot elevations in the neighboring undisturbed areas should be included on the as-built plan. In addition, ground based photographs from representative locations in each of the four wetland restoration areas should be included to provide a baseline record of the finished grade and as a monument for permanent photographic stations that can be used during the adaptive management monitoring period (explained in IV.A. and B. below).

If grades are acceptable, EPA, within 30 days of receipt of the as-built plan, will notify the Defendant in writing that earthwork is complete. At receipt of this letter, Defendant is to begin seeding and planting according to the time frames below. This requirement does not prevent earlier approval of restoration areas and the initiation of erosion control seeding or any other seeding/planting if conditions permit.

An approximation of the cost involved in surveying as-built conditions: 4 hours X $95/hr = $380.[1]

IV. Monitoring/Measures of Success.

A. Measures of Success. Finally, EPA requests that the Court order Defendant to prepare and implement an annual monitoring and adaptive management plan for at least five (5) years - beginning the first full growing season after the completion of earthwork. The monitoring and adaptive management plan should include the following site specific performance standards that allow the quantification of site goals for revegetation:

1. If the restoration area does not achieve 70% relative ground coverage of vegetation after two growing seasons; and/or 80% relative ground coverage of vegetation after three growing seasons; then

    a. the Site shall receive supplemental seeding or planting of plant plugs during each subsequent spring planting season until the 70% or 80% relative ground coverage of vegetation standard is met;

2. If the restoration area does not achieve a 10% or less standard for the relative ground coverage of non native or invasive vegetation; then

   a. herbicide, mowing or hand pulling methods of invasive species plant control must be implemented immediately. Non native or invasive plant species are defined by Plants of the Chicago Region, (1994, Floyd Swink & Gerould Wilhelm) and include, but are not limited to *Phragmites australis, Lythrum salicaria, Phalaris arundinacea, Typha X glauca* and *Typha angustifolia.*

3. If the restoration area does not have at least 50% of the shrubs survive after any annual site inspection, then replanting of shrub species will occur in the dormant season of that same year until the numeric standard is obtained;

   and

4. If performance standards are not met after the end of the five (5) year monitoring period, then corrective action necessary to achieve these performance standards and the monitoring to track performance will continue annually until the performance standards are met.

B. Monitoring Schedule. Monitoring inspections will begin the first full growing season after the completion of earthwork. The restoration areas shall be inspected annually for five (5) successive growing seasons (on or about July 1st) to assess the relative success or failure of each of the four wetland restoration areas. Random sampling will be used to establish a permanent sampling transect within each of the four restoration areas. At least 30 sampling stations will be established and samples examined within a square meter quadrat. Information collected within the quadrats will include species presence (i.e., genus and species is identified) and relative ground coverage of each identified species. The collected data can be aggregated and analyzed for compliance with the performance noted above.

C. Monitoring Reports. EPA believes that annual monitoring reports, documenting the previous growing season site inspection results, should be submitted annually by October 1st (or the next business day if October 1 falls on a weekend or federal holiday) and include:

1. Written narrative characterizing general site conditions, including revegetation, soil stability and hydrology (i.e., the level of surface inundation or soil saturation to 20 inches below the ground surface);

2. Vegetation sampling results identifying species and relative ground coverage and a determination of compliance with performance standards; and
3. A photographic record - from set locations - of each of four restoration areas.

An approximation of the annual cost involved in monitoring and reporting: 16 hours X $75/hr = $1,200/year.[12]

V. Schedule

Site work is contingent upon the Court's schedule, though the following limitations will impact the ability to move soil and seed/plant vegetation:

- Earth work during winter months - approximately December 1 - March 1 - may be limited by frozen ground surfaces;
- Earthwork should be completed within a two week time period; and
- Seeding and planting should be either during the fall dormant season or early spring growing season. It is possible that the seeding/planting between permanent vegetative cover and erosion control seeding may be split between fall and spring.

VI. Exhibits to Be Used as a Summary of or in Support of Opinion

1. EPA Restoration Guidelines

VII. Qualifications

I received a Bachelor of Science Degree from the University of Wisconsin at Stevens Point in 1982, with majors in resource management, political science, and public administration and policy analysis. In 1986, I received a Master of Public Affairs Degree from Indiana University, where I took courses in environmental analysis and environmental law. Following graduation, I took further course work at Aurora University, Northern Illinois University, and Northeastern Illinois University, where I studied, respectively, plant taxonomy, wetlands, and field methods in hydrogeology.

I have also attended formal training programs related to my employment with EPA, including programs in wetland delineation; identification of wetland soils, plants and hydrology; air photo interpretation; rapid and hydrogeomorphic wetland assessments; wetlands and wastewater; and basic inspector training. I have been certified as a herbicide applicator. As part of my employment, I have taught courses for students, lawyers, and public employees on wetland delineation methods under the Manual and EPA's Section 404 regulatory program.

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I have overseen numerous wetland restoration projects between 1990 and the present related to formal and informal Section 404 enforcement actions. The restoration process, methods and equipment herein are similar to past and on-going projects I am responsible for in my position as an Enforcement Officer and Life Scientist. I have an educational background in the biological sciences and in soil science that supports my job experience in the wetland restoration field and have taken training courses that similarly support my professional duties.

VIII. Cases in Which the Witness has testified as an Expert at Trial or By Deposition Within Preceding Four Years

A. Judicial

U.S.A. v. Paul Heinrich, Case No. 03-C-0075-S, October 2003, Western District of Wisconsin, witness at trial and provision of expert report on wetlands and extent of fill in wetlands

U.S.A. v. Hartz Construction, Northern District of Illinois, deposition and field report prior to case settlement

U.S.A. v. Rueth Development Co. and Harold G. Rueth, Case No. 2:96-CV-540, November 2000, Northern District of Indiana, affidavit in support of Motion to enforce consent decree

U.S.A. v. A&A Farms, Case No. 98-C-0583-S, Western District of Wisconsin, 2000 and 2001, affidavits in support of two Motions to enforce consent decree

U.S.A. v. Bridgeview Joint Venture, et al, Case No. 94-C-3184, Northern District of Illinois (Eastern Division), April 1999, depositions involved with Motion to resolve issues under the consent decree

B. Administrative Hearing Pursuant to Section 309(g) of the Clean Water Act

Greenfield Bayou Levee and Ditch Conservancy District, 2002, witness at hearing

Lawrence Crescio, May 1998, witness at hearing

END NOTES

1. Cost based on 1997 Maxim Technologies, Inc. invoice; time is an approximation based on best professional judgment.

2. Cost based on 2002 J.F. New & Associates, Inc. consultant service fee; time is an approximation based on best professional judgment.

3. Fill removal cost based on 1997 Charles Vogel Enterprises, Inc. equipment rental costs, including labor; time to remove assumes 10 cubic yards per five (5) minutes which equals 1600 cubic yards/8 hour day for excavation.

4. Hauling and disposal costs based on 1997 Charles Vogel Enterprises, Inc.; a 10 minute round trip for hauling/dumping is an approximation based on best professional judgment and assumes Defendant uses his own nearby land which is already in use for dumping earthen, asphalt and broken concrete debris

5. Grading costs based on 1997 Charles Vogel Enterprises, Inc.; a five (5) minute grading operation for each dumped load is an approximation based on best professional judgment.

6. Oversight costs based on 2002 J.F. New & Associates, Inc. consultant service fee; time assumes that for each day of oversight - there are 11 days of earthmoving - consultant will be on-site up to four (4) hours per day; time on-site is an approximation based on best professional judgment.

7. Straw mulch costs based on 2003 Griffin Consulting Company estimates of $5.00/100 square feet of land area; this does not include labor costs of spreading and crimping straw mulch into the ground surface.

8. Seeding costs based on 1991-1992 LaFayette Home Nursery, Inc. fees of $545/acre for sedge meadow grass seed mix + $400/acre for installation.

9. Shrub planting costs based on 2003 and 2004 personal experience of $20 per potted native shrub; native shrubs purchased at U.S. Forest Service's Midewin National Grassland volunteer foundation and Lake County (Illinois) Forest Preserve District sales to public

10. Emergent plug planting costs based on 1990 Webster, McGrath & Carlson, Ltd. Engineers Cost Estimate; rate of plant plugs is reduced by 75% because of expected reemergence of plants after fill material removal; rate is 500 plant plugs per acre for 2.5 acres of land area.

11. Silt fence costs based on 1990 Webster, McGrath & Carlson, Ltd. Engineers Cost Estimate; length of silt fence is measured off of July 1998 Weaver Boos & Gordon, Inc.'s Site Survey And Property Description, Rowland Fabian Property, Lake Station, Indiana.

12. Monitoring and reporting costs on 2002 J.F. New & Associates, Inc. consultant service fee; time assumes one day for field work and one day for analyzing and report writing; field and office time is an approximation based on best professional judgment.

EXHIBIT NO. 2

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 5
SECTION 404 ENFORCEMENT:
GENERAL GUIDELINES FOR REMOVAL AND RESTORATION PLANS

The following guidelines serve as general specifications for preparing removal and restoration plans to remediate the unpermitted filling of wetlands. As environmental conditions vary at every site, precise specifications defining the scope and complexity of the restoration plan will depend upon the size of the wetland area to be restored, its biological and physical characteristics, and the level of disturbance the wetland has experienced among others. In most cases, the types of information listed below represent the minimum required to formulate an acceptable removal and restoration plan.

I. Existing Physical Conditions

A. A surveyed site plan depicting property boundaries, and site features, including roads, ditches, culverts, tile systems, waterbodies (including wetlands) and areas of unpermitted fill. Spot elevations are required at representative locations to discern normal undisturbed grades from fill elevations. The plan scale should be no greater than 1 inch = 40 feet.

II. Proposed Physical Conditions

A. Using the site plan described in I.A. as a base, show the exact areas where remedial activities will occur (e.g., removal of fill, replacing dredged material into ditches, etc.). Indicate proposed finished grades, and the location of all erosion control features (e.g., silt fence).

B. Provide a narrative description of the remedial work to occur, including the methods and equipment to be employed; routes for equipment access; the location of the disposal site for any removed fill; how the work will progress across the site; and planting specifications (i.e., temporary stockpiling of fill removed, erosion control phasing, revegetation). Generally, we require that tracked equipment be used in wetland areas.

C. Prior to the commencement of removal work, the construction work area must be defined. Delineate the site restoration areas by installation of flagging, erosion control structures, or other appropriate method; this delineation shall

represent the limit of construction activities such that **no** work shall occur beyond these boundaries.

III. As-Built Physical Conditions

A. Using the site plan described in I.A. as a base, show the actual physical conditions at the site at the completion of grading activities (i.e., an "as-built" plan), including finished grades and all pertinent ground surface and subsurface features (e.g., stratigraphy of restored soil profiles). This as-built plan shall be prepared and submitted prior to planting/seeding activities.

IV. Monitoring/Measures of Success

A. Monitoring plans are required for a minimum of five years - longer for reforestation. Monitoring commences the first full growing season after the completion of all earth moving activities and annually for each successive growing season for the duration of the required monitoring period. Monitoring frequency can be adjusted based on the complexity of the remedial efforts required and the recovery rate shown by the site.

B. A monitoring plan shall incorporate a simple statistical approach to assessing site flora and other measures of site restoration success (e.g., randomly placed sampling plots or transects measuring species presence, abundance (percent areal cover) and nativeness. The other parameters commonly measured and documented are surface inundation or depth to saturated soil, soil profile descriptions and site stability. A permanent photographic record shall be included as part of the monitoring plan.

C. Depending upon the scope and complexity of the restoration efforts, general criteria to measure success (i.e., performance standards) shall be determined by USEPA. The criteria defining success and its measurement shall be directly related to reestablishing the structural components of the aquatic ecosystem being restored. Commonly, performance standards are related to revegetation and wetland status. A general provision shall be included to allow for corrective action to be taken, at the direction of USEPA, should monitoring show that criteria for success are not met.

D. A report shall be prepared and submitted after each

growing season's monitoring event(s) which describes the environmental conditions at the site and assesses relative success or failure of restoration efforts. This report shall include permanent and repeatable photographic stations that represent the site. As appropriate, this report may recommend corrective action to ensure the success of restoration.

V. Inspection

A. The plan shall provide for inspection by USEPA personnel or their designated representatives prior to, during or after the completion of earth moving activity and prior to seeding/planting, after installation of erosion control structures, after planting, and during the monitoring period.

VI. Schedule

A. A comprehensive schedule integrating all removal, restoration, inspection, and monitoring activities as well as report/product submissions shall be included.